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ESSA TECHNICAL REPORT ERL 79-ITS 67

Prediction of Tropospheric Radio Transmission Loss Over Irregular Terrain

A Computer Method–1968

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Comments and Errata, April 1970

page 3 — Insert at the end of the second line:

"Modifications of the method that may be used in these special cases are described in Annex 3, page 3.2."

page 11 — After (4d) insert:

"Comparison of calculated values of transmission loss with data from a large series of measurements, made with low antennas over irregular terrain, indicates that when one terminal is selected with a clear foreground and the other is randomly chosen the following estimates of effective height may be used:

For $h_{g1,2} \leq 2m \quad h_{e1,2} = h_{g1,2}$ (4e)

For $h_{g1,2} > 2m$ h_{e1} and h_{e2} are defined by (4b)

with $k = \begin{cases} 1 + \sin(\pi h_{g1,2}/10) \text{ for } 2 \leq h_{g1,2} \leq 5 \\ 5 \text{ otherwise.} \end{cases}$ (4f)"

page 1-9 — At the bottom of the page add:

"The variability curves shown in figures 1.1, 1.2, 1.4 and in the referenced report were drawn through available data at VHF and lower UHF. They are, therefore, not strictly applicable to line-of-sight propagation at UHF and microwave. For such paths care should be taken to limit the calculated basic transmission loss values for small percentages of time, figure 1.6, to avoid obtaining estimates that would be substantially(by more than 4-5 dB) less than the corresponding free space values."

pages 2-16, 21, and 35 In equations (5.c) and (2.1) replace he with h_e.

pages 2-24 Equation (6a) insert comma: $d_{LS1,2}$.

page 2-38 Equation (6a) should read the same as on page 2-24.

page 3-2 Line 2 add the following:

"In this case calculations may be made using the actual earth's radius of 6370 km instead of an "effective" radius."

page 3-2 At the end of the 3rd paragraph add:

"If the distance $d_{L1,2}$ for a specific path is less than one tenth of the corresponding smooth earth distance $d_{LS1,2}$ measured values consistently exceed the calculated values. This condition, which may occur with very low antennas over irregular terrain, may be corrected by adding a term ΔL_c to the calculated loss, where ΔL_c is defined as:

for $d_L < d_{LS}$ $\Delta L_c = 10 \log_{10} (d_{LS}/d_L)$ dB,

for $d_L \geq d_{LS}$ $\Delta L_c = 0$ dB."

page 3-11 Following statement 2 replaces x with $x_{1,2}$

"and $x_{1,2} \geq -450/. \ldots$ "

page 3-12 At the end of the second line add the following:

"For values of $K(a) \geq 1$ the above equations for $F(x_{1,2})$ are not applicable. Values of $K(a) \geq 1$ occur only with vertical polarization, at low frequencies, with the radius a_1 or a_2 very small. In such a case if we assume K(a) to be slightly less than unity, $F(x_{1,2})$ will be overestimated by an amount less than 2 dB.

page 3-33 Delete the 3rd DATA statement.

p. 3-34 Top of page replace the first two lines with:

"DL1 = DLS1 * EXPF (-.07 * SQRTF (DH/MAX(5, H1E)))

DL2 = DLS2 * EXPF (-.07 * SQRTF (DH/MAX(5, H2E)))"

p. 3-36 Statement 22 change K1 to K2.

p. 3-37 Second statement after 30, change to read

"IF (DXN.GT.DX) AES = AED + (MD-MS) * DXN,"

and add "IF (DXN.GT.DX) AS = AES + MS * D"

p. 3-38 Statements following 20 change to read

"DL1 = DLS1 * EXPF (-.07 * SQRTF (DH/MAX(5, H1E)))

DL2 = DLS2 * EXPF (-.07 * SQRTF (DH/MAX(5, H2E)))

TE1 = (.00065/DLS1) * ((DLS1/DL1-1) * DH - 3.077 * H1E)

TE2 = (.00065/DLS2) * ((DLS2/DL2-1) * DH - 3.077 * H2E)"

p. 3-40 Delete the first line.

"W = MINIF (H1E, H2E) . . ."

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